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the foregoing operation is repeated a predetermined number of times corresponding to the number of assemblies to be placed in the windows.

## REMARKS

Claims 1 to 32 remain in the instant application. Claims 1, 7, and 16 to 19 have been amended and claims 28 to 32 are new. There is support in the specification, claims and drawings as originally filed for the amended claims and the new claims.

Reconsideration of the Examiner's decisions and reexamination of this application are respectfully requested.

A clean copy of the amended claims and the new claims is included with this Amendment. A MARKED-UP VERSION SHOWING CHANGES MADE of the amended claims is included in the APPENDIX.

The claim objections:

Claims 17 and 18 have been objected to by the Examiner because they depend on ensuing claim 19.

Claims 17 and 18 have been amended to correct their dependency so that they now correctly depend on claim 16. The objection to claims 17 and 18 should now be moot.

The §102 rejections:

Claims 1 to 27 have been rejected by the Examiner under 35 USC §102(a) as being anticipated by Bergeron et al. U.S. Patent ,163,014 (hereafter "Bergeron").

The Examiner also rejected claims 1 to 27 under 35 USC §102(e) as being anticipated by the same Bergeron patent. Did the Examiner perhaps mean one of the other Bergeron et al. patents? Clarification of this rejection is respectfully requested.

A brief explanation of Applicant's invention would be instructive here. A loading force is applied to move the shearing element in a fixture from its home position. An assembly of a semiconductor device (or circuit chip) and a substrate is then placed in the fixture. The loading force is removed and an adjustable biasing element causes the shearing element to be moved back towards its home position and against the semiconductor device. The adjustable biasing element in cooperation with the shearing element thus causes a shearing force to be exerted against the semiconductor device. The fixture may then be placed in an oven where the solder connections are softened facilitating shearing of the semiconductor device form the substrate. All of the independent claims 1, 7, 16 and 19 have been amended to make it clear that the biasing force that cooperates with the shearing element is adjustable. In this manner,

the biasing force can be adjusted to accommodate various chip sizes and number of solder connections. (See specification, page 22, lines 7-18).

Comparing Applicant's invention as just described, it can be seen that there are at least two significant differences between Applicant's invention as embodied in claims 1, 7, 16 and 19 and Bergeron. One significant difference is the application of a loading force to move the shearing element from its home position to which it is urged by the adjustable biasing force. No such loading force is shown in Bergeron. The second significant difference is the adjustable biasing force. There is no disclosure in Bergeron to adjust the biasing force. In view of the foregoing remarks, it is submitted that Bergeron cannot anticipate Applicant's claims 1, 7, 16 and 19.

Inasmuch as claims 2 to 6, 8 to 15, 17, 18 and 20 to 27 depend from claims 1, 7, 16 and 19, and since claims 1, 7, 16 and 19 are believed to be allowable then claims 2 to 6, 8 to 15, 17 18 and 20 to 27 should be allowable as well.

In addition, claims 4, 6, 9, 10, 11, 14, 18, 21, 22 and 23 are believed to be independently patentable. All of these claims claim the combination of the shearing element (i.e., a blade), a slidable element or block and a coil spring (which provides the adjustable biasing force on the shearing element). In Figures 4 and 5 of Bergeron, plate 52 which is connected to blade 53 is not moveable. Similarly in Figures 6 to 11, the bottom plate 66 or 106 that is connected to the blade 91-92 or 111-113 is stationary. Thus, there is no combination of features in Bergeron that shows Applicant's

combination of shearing element, slidable element or block and coil spring. Accordingly, Bergeron cannot anticipate Applicant's claims 4, 6, 9, 10, 11, 14, 18, 21, 22 and 23.

New claims 28 to 33:

Applicant has added new claims 28 to 33 which further patentably distinguishes its invention over the prior art. In particular, new claims 28 and 29 depend from claims 1 and 7, respectively, and claim an additional step of adjusting the adjustable biasing force to a predetermined biasing force. Such a step is clearly not shown in Bergeron.

New claim 30, dependent on claim 16, claims further details of the adjustable biasing element in that the adjustable biasing element comprises a coil spring and an adjusting element for adjusting the bias applied by the coil spring. While Bergeron appears to show a coil spring, Bergeron does not show an element for adjusting the coil spring. Therefore, Bergeron cannot anticipate Applicant's claim 30.

New claim 31, dependent on claim 16, claims the apparatus where a plurality of semiconductor devices are separated from a plurality of substrates. Essentially, there is a one to one correspondence between the biasing elements, shearing elements and windows. Such an arrangement is not shown in Bergeron, In the embodiment shown in Figures 4 and 5 of Bergeron, there is a one to one correspondence between the various

elements but only a single semiconductor is separated. In Figures 6 to 11 of Bergeron, where multiple semiconductor devices are separated from multiple substrates there is no one to one correspondence as Applicant has claimed since there is only one biasing force for all the semiconductor devices to be sheared.

New claim 32 has been added as an independent claim to claim the embodiment of the apparatus where multiple semiconductor devices are separated from a multiple of substrates. As indicated just above, Bergeron does not show such an embodiment.

Summary:

In view of all of the preceding remarks, it is submitted that all of claims 1 to 32 are in condition for allowance. If the Examiner finds this application is deficient in any respect, the Examiner is invited to telephone the undersigned at the Examiner's earliest possible convenience.

Respectfully submitted,

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**APPENDIX**
VERSION SHOWING CHANGES MADE

1. (Amended) A method for separating a semiconductor device from a substrate in a fixture having a shearing element where the semiconductor device is attached to the substrate by solder connections to form an assembly, the method comprising:

applying a loading force to drive the shearing element away from its home position to which it is urged by [a] an adjustable mechanical biasing force into a loading position,

loading the assembly of the substrate and the semiconductor device into the fixture with the shearing element proximate to the semiconductor device,

removing the loading force to apply a shearing force derived from the adjustable mechanical biasing force [which is] and applied by the shearing element to the semiconductor device, and

heating the solder connections of the assembly in the fixture to a predetermined temperature.

7. (Amended) A method for removing a circuit chip from a substrate in a fixture having a shearing element where the chip is secured to a substrate by bonding elements, comprising:

applying a loading force to move the shearing element from a mechanically biased home position into a loading position against [a] an adjustable biasing force,

then loading the substrate with the chip onto the fixture,

removing the loading force to arm the shearing element into a position in contact with the chip, so the adjustable biasing force is applied by the shearing element to the semiconductor device, and

heating the assembly located in the fixture to a predetermined temperature until shearing of the bonding elements occurs while continuously applying the mechanical force with the shearing element.

16. (Amended) Apparatus for separating [a] at least one semiconductor device from [a] at least one substrate where the at least one semiconductor device is attached to the at least one substrate by solder connections to form an assembly, comprising:

a biasing element for applying a loading force to drive a shearing element away from its home position to which [into a loading position under a fixture] it is urged by [a] an adjustable mechanical biasing element into a loading position under a fixture,

a loading element for placing the assembly of the substrate and the semiconductor device into a fixture with a window therethrough for the semiconductor device with the shearing element in contact with the semiconductor device and armed for shearing the semiconductor device from the substrate.

17. (Amended) The apparatus of claim [19] 16 wherein the shearing element comprises a slidable blade.

18. (Amended) The apparatus of claim [19] 16 wherein the shearing element is a blade affixed to a slidable element that is connected by a linkage to a coil spring which applies the biasing force thereto.

19. (Amended) Apparatus for removing a circuit chip from a substrate where the chip is secured to a substrate by bonding elements, comprising:

a biasing element for applying a loading force to move a shearing element from a mechanically biased home position into a loading position under a fixture against [a] an adjustable biasing force,

a loading element for placing the substrate with the chip onto the fixture, and

a retaining element for holding the shearing element in a position in contact with the chip, so the biasing force is applied by the shearing element to the semiconductor device.